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Combat Crew

strategic air command

AUGUST 1986
★★★★

Special Feature

"The Spirit's Last Flight"

General John T. Chain, Jr.
Commander in Chief
Strategic Air Command

FORTY & FORWARD

It's an extraordinary honor for me to be part of the Strategic Air Command. SAC is the finest command in the Air Force and the most important military organization in the free world. Both our allies and our adversaries understand that reality.

By the end of the summer, I plan to visit every SAC base in the "Lower 48," and visit Alaska, Europe and the Pacific soon thereafter. It's important for me to get to know SAC's people quickly and on a personal basis. I hope to have the chance to talk individually with you. Until we have that personal conversation though, I'm grateful for the opportunity provided by this article to **"talk"** with you concerning some of my initial thoughts and observations.

SAC's purpose is to deter war and keep Americans alive and free. That's a demanding mission; there's none more important. The nation's — and the rest of the free world's — security is built on the solid foundation of SAC's capabilities and the professionalism of SAC's crew force.

Carrying out that mission successfully requires the highest level of dedication and a total commitment to excellence. These qualities, are visibly present in SAC's daily operations. They have earned SAC a well-deserved reputation as the world's preeminent military force.

SAC has been key in keeping the peace for more than 40 years, a long and successful history in which all of us can take justifiable pride. The future promises to be equally as exciting. New weapons, including the B-1B and the PEACEKEEPER, are entering the inventory now. Others, such as the Advanced Technology Bomber, New Small ICBM, and Advanced Cruise Missile, will follow later.

Concurrently, we are making cost-effective upgrades to our existing systems. Enhancements to the B-52 have doubled its capabilities, while improving reliability and maintainability and projecting the system's effectiveness in both nuclear and conventional roles far into the future. Reengining our KC-135s is giving us the equivalent of three tankers for every two we have in the inventory. The MINUTEMAN force has undergone several accuracy improvements while its reliability and maintainability are being bolstered by the RIVET MILE program. TITAN is a special story. One of the most difficult tasks faced by a military unit is to carry out an important mission and maintain morale and commitment while "drawing down" a major weapon system. The TITAN crew force has sustained its SIOP commitments while achieving the highest alert rates in the system's history.

I can cite several other examples. Like those noted above, each speaks to SAC's professionalism and the caliber of its people. My initial observations have confirmed my previous impressions: the quality of SAC's "total force" — active, Guard and Reserve, and civilian personnel — is **unsurpassed.**

The "bottom line" is that SAC is Number One — the best military unit in the world. We intend to keep it the best by emphasizing those programs which encourage innovation and creativity and by delegating authority and responsibility to the lowest practical level. That's where the ideas originate that enable us to work quicker, smarter, and better. My personal philosophy is that while our mission is vital and our jobs essential, we should have fun while we're doing them! That's important. The job should be enjoyable — something we can look forward to every time we come to work.

I'll close as I began by reemphasizing the privilege it is for me to be part of SAC. While I have been deeply involved with strategic issues in my last several jobs, being Commander in Chief of the Strategic Air Command is a high distinction to which no officer could realistically aspire. It's indeed an honor. I'm proud to be part of the Command, and I'm looking forward to meeting and working with you in the days ahead.★★★★

Combat Crew

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ON OUR COVER

After a 22-year rest, a B-47E recently took to the skies for one last flight. For more on this story, turn the page.

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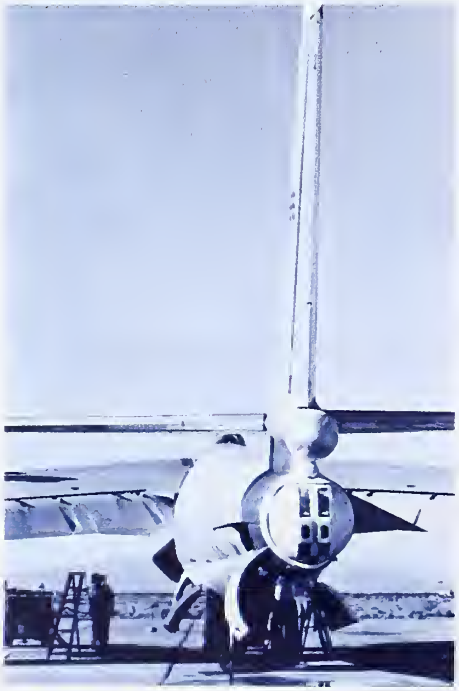
Next Month . . .

A salute to the KC-135 on its 30th anniversary

Maj Bob Neidrick, Editor

"The Spirit's Last Flight"

Rear view of Spirit at China Lake.



Tuesday, 17 June 1986 will be long remembered as a historic day for the men and women of Castle AFB. On that morning a bit of Castle's past was relived as a B-47E touched down on runway 31. The aircraft, tail number 0-20166 and dubbed the **"Spirit,"** had flown for the first time in nearly 22 years. After sitting in California's Mojave Desert for two decades, the Stratojet was flown approximately 300 miles to Castle to be a featured attraction at the Castle Air Museum.

The aircraft, one of approximately 2100 B-47s manufactured, was delivered to the Air Force on October 25, 1954. It was first assigned to the 9th Bomb Wing (SAC) at Mountain Home AFB. After assignments with the 509 Bomb Wing at Walker AFB, NM and Pease AFB, it was assigned to the 40th Bomb Wing at Forbes AFB before it was dropped from the USAF inventory in August 1964 and turned over to the Navy at China Lake Naval Weapons Center.

The Navy used the retired bomber as an electronic bomb target allowing the aircraft to remain intact until Russell G. Morrison, a retired chief master sergeant and former director of the Castle Air Museum, discovered it in the desert while looking for another aircraft restoration candidate. Less than two months later, the B-47 was transferred to the Air Force Museum. The restoration process which began in June 1981 culminated with the historic takeoff from China Lake.

Maj Gen J. D. Moore, an airline captain and an Air Force reservist with 3,200 hours in the B-47 was the pilot. He was accompanied by Lt Col Dale Wolfe, an FB-111 instructor pilot from Plattsburgh AFB with 2000 hours B-47 experience. Their

Gen Moore signs for aircraft fuel as CMSgt Lindsey and Mr Ganville Young observe.

Gen Moore, pilot, and Lt Col Dale Wolfe, copilot, prepare for flight.

CMSgt Richard Lindsey, Maj Gen J. D. Moore and Col F. W. Hoppmann, 93 BMW DCM, during aircrew preflight walk around.

Spirit's maintenance crew stands by for taxi at China Lake.

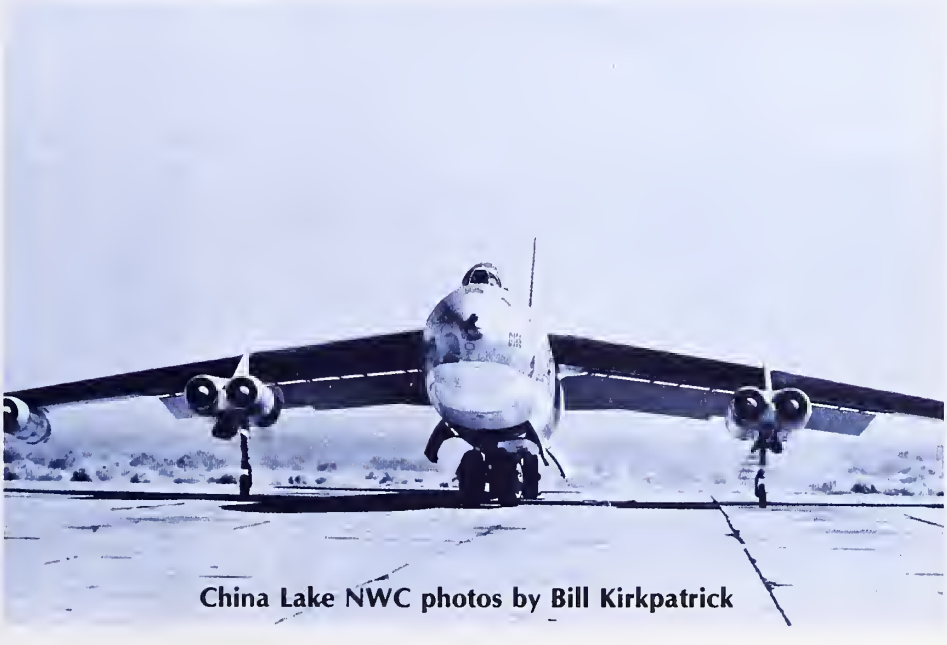
most recent B-47 flights occurred in January 1962 and December 1965, respectively.

In preparation for the flight, Gen Moore completed a high speed taxi down the China Lake runway a year ago and both crew members "boned up" on tech order procedures with flight manuals provided by the Boeing Company and former B-47 crew members.

Although Gen Moore and Lt Col Wolfe had the pleasure of flying the Stratojet to its final resting place, the dedicated efforts of many individuals throughout the Air Force and especially at the Castle Air Museum made the flight happen.

Far too many people were involved to mention individually, but among the approximately 75 who voluntarily donated numerous weekends working on the aircraft and spent thousands

Spirit taxis off the apron.



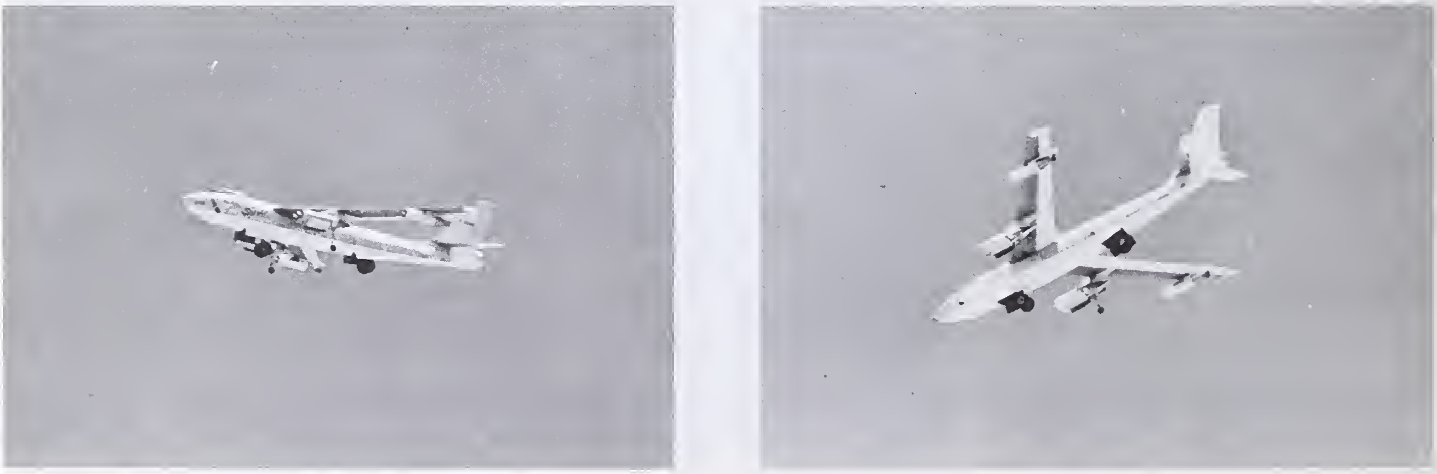
China Lake NWC photos by Bill Kirkpatrick of their dollars during the project, there are a few key individuals who should be singled out. Mr Mel Hedgpeth, the acting director of the Castle Air Museum, ramrodded the project; CMSgts Richard Lindsey and Jim Reeves managed the maintenance work. Additionally, Maj Gen James McCarthy, SAC/XP, who was the 93 Bomb Wing commander during the founding of the Castle Museum, played a key role as did Cliff James, present Chairman of the Board of Directors of the Castle Air Museum Foundation.

Parts for the aircraft came from various sources. Another unflyable B-47 at China Lake was a source for many parts as were several B-47s in other museums. All maintenance was completed in accordance with today's Air Force standards. Although tech orders were difficult to find, those used were more than adequate. The

The B-47E approaches China Lake's flight line.

Takeoff — June 17, 1986.

Spirit performs a final flyover over her resting place of many years — China Lake NWC.



aircraft flew with only essential systems such as engines, flight controls, basic flight instruments, etc.

The decision to fly the aircraft to Castle rather than trucking it there was partly based on cost. A 1984 estimate to disassemble, transport and reassemble the aircraft was over $183,000. After **"Spirit"** was deemed to be airworthy, execution for the flight was granted through HQ SAC/DO channels.

Interestingly, Chief Lindsay who was originally trained in the B-47 in the 1960's was the crew chief on the last B-47 aircraft in the Air Force inventory. A former B-47 crew member who was among the spectators gathered to watch the arrival at Castle summed up the feelings of many when he said, *"It was like having a visit from an old friend."* Congratulations to everyone associated with the project.

Spirit heads west towards Bakersfield. The B-47E then turned north, following Hy-99 to Castle AFB.

Chief Lindsey congratulates his maintenance team after the successful launch.

At the end of Castle's runway the newly arrived B-47E gets a brief maintenance check.

Castle AFB photos by SSgt Tommy Viada

A very proud man — Mr Mel Hedgpeth, acting director of the Castle Air Museum. Mr Hedgpeth was one of the major forces behind Spirit's revival.

Spirit pulls in front of base operations at Castle AFB during a welcome ceremony.

The Night the Ground Shook

John M. Kelly

The evening of June 5th, 1944, held the promise of a fine night. Under clear skies at the U.S. Army Air Force Station 111 — Thurleigh, the moon was rising as a soft, warm wind caressed the English countryside. It was, in the words of Sir Harry Lauder's song: "... a braw brecht moonlecht necht ..." but the tranquility of those early hours was soon to be shattered.

It started about 9 p.m. or 2100 hours as we then reckoned time. It came with the throaty roar of an airplane engine springing to life and drowning out the hum of the crickets. Soon other engines erupted in sound; each adding to the swelling cacophony of martian music signaling the start of Operation Overlord — the long awaited Allied invasion of Festung Europa. The beginning of the end of the Third Reich — D-Day!

Unless you were there, it is hard to realize that England, in mid-1944, resembled in many ways a vast aircraft carrier. Hundreds of airfields dotted the countryside, especially through the Midlands and East Anglia up to the wash.

Home to thousands upon thousands of British and American airmen, these fields were the launching point for bombers (heavy, medium and light); fighters (day and night); photo and weather reconnaissance planes; troop carrier transports and assault gliders.

Combat operations had been conducted from most of these bases for many months prior to the invasion, but on the nights of June 5-6, **Operation Overlord** would bring thousands of machines and men together in the greatest unified air action ever seen. And vast as it was, this great, ground-based air fleet was made even larger by additional planes from American and British naval carriers laying offshore.

D-Day brought 11,000 Allied aircraft swarming over Normandy in support of the landings on the beaches below. Many of these planes flew more than one mission that day. By nightfall on June 6, over 30,000 sorties had been flown.

The logistics, routing and control of such an air armada were of staggering proportions; thus the early start on the previous night. Planes had to be fueled, armed and inspected. Crews needed to be briefed, engines to be warmed up — then takeoff, rendezvous and assembly.

Few people in England would sleep as the mighty voice of tens of millions of horsepower surged through the night air. The ground literally shook in many places that busy night, and witnessing this gigantic undertaking would prove to be a never-to-be-forgotten experience.

USAAF Station 111 at Thurleigh was some 40 miles north of London and about 25 miles west of Cambridge. Built in the early 1940's for the Royal Air Force Bomber Command, it was home for RAF Squadron No. 160 for only a month before the unit was posted to duty in Karachi, India, in February 1942.

In September 1942, the 306th Bombardment Group (H) arrived in their B-17s (Flying Fortress) from Wendover, Utah, and remained at Thurleigh for over three years. This proved to be the longest tenure by any American combat unit at a U. K. base. The group was composed of four bombardment squadrons: 367th, 368th, 369th, and the 423rd. Together with support units, some 3,000 men would be the average station complement. By D-Day the 306th had flown 170 combat missions over the continent.

On D-Day the group flew three more missions. I know, because as a newly promoted captain in a newly assigned job as operations officer of the 423rd squadron, it was my task to assign the air crews, see to the briefings, coordinate matters with ordnance, maintenance, etc. What I didn't get to do was fly. Group policy you know! Operations officers were not to be considered regular combat flyers; their main duties took precedence.

Actually, by the time D-Day arrived I'd flown almost 200 combat hours in some 28 missions to targets in such places as Wilhelmshaven, Bremen, Frankfurt, Leipzig and of course, Big "B" — Berlin!

I had arrived in the U.K. on October 14, 1943, a day the 8th Air Force was suffering one of its largest losses of the war. Attacking the ball bearing works at Schweinfurt, the 8th Air Force lost 60 heavy bombers on that day which came to be known as "Black Thursday." The 306th Bombardment Group (H) was one of the groups especially hard hit, losing 10 of the 18 planes they sent out that day.

Replacement crews were urgently needed and by the end of October, 15 new pilots, myself included, together with our crews, arrived at Thurleigh to commence combat duty. In less than three months, nine of the fifteen would be out of action. Three were destined to be killed in action; four would be prisoners of war in German camps; another, shot down, evaded capture until his ultimate liberation by Patton's army in August of 1944; and the ninth, severely wounded by 20mm cannon fire brought his badly damaged plane back to England but was in no condition to ever fly again.

> **"Attacking the ball bearing works at Schweinfurt, the 8th Air Force lost 60 heavy bombers on that day which came to be known as *Black Thursday.*"**

My crew and I got our first taste of the air war on November 3rd with a six hour mission to Wilhelmshaven. The bombing run was successful, flak was meager and the few enemy fighters seen did not press the attack. Nonetheless, it was not to be a casualty-free day.

On the return flight to England, two planes of the 368th Squadron (the squadron to which we'd been assigned) collided in mid air. There were no survivors. We returned to Thurleigh and contemplated 20 empty bunks. Obviously war was not all Hollywood heroics.

Almost 31 weeks passed by; the group flew another 88 missions, and now on the night of June 5th we prepared for D-Day operations.

Searchlights aimed straight into the night sky began to wink on across the countryside. This unusual breach of

wartime blackout regulations was a response to the unusually heavy air traffic that night. The beacons marked assembly points for the groups of planes now forming up. Among the first in the air were Lancaster, Halifax and Short Stirling heavy bombers of the Royal Air Force who set out to strike around midnight at targets in the Pas de Calais area.

This was consistent with a diversionary strategy that had been followed for some weeks and was designed to make the Germans believe that the invasion would come at the point where the English Channel was the narrowest. This ploy, perhaps the single most important element in the success of the invasion, had succeeded.

Field Marshals Gerd von Runstedt and Erwin Rommel, convinced that the attack would come in the Pas de Calais area, had concentrated their strongest force, the German Fifteenth Army, north of the Seine between Le Havre and Dunkirk and had increased its strength that spring from 10 to 15 divisions. Meanwhile, under cloak of darkness, thousands of ships carrying the Allied invasion forces steamed not towards Picardy, but to the Normandy beaches where they would meet the much weaker German Seventh Army.

The ground in England continued to shake as hundreds upon hundreds of troop carrier planes, many towing assault gliders, took to the air. Assembling on the beacons they headed for France carrying the American 82nd and 101st Airborne Divisions and the British 6th Airborne Division to their drop zones.

Starting shortly after midnight, landings of gliders and paratroopers commenced over a wide area. The German Army sounded a general alarm at 1:30 a.m., June 6th, 1944. **Operation Overlord** had begun in earnest as the airborne soldiers proceeded to destroy bridges, communication points, and to raise general hell in a manner designed to frustrate any attempt to reinforce the German Seventh Army which, in a state of near panic, prepared for the first assault waves scheduled to hit the beaches at 6:30 a.m.

As day broke, the assault from the sea started. Overhead the sky filled with thousands of fighter planes beating up the beaches, driving defending German forces to take cover, and aiding the debarking troops on the beaches below.

Throughout the day the bombers and the fighters returned again and again. Air cover was absolute; by nightfall the beachhead was secure and the long march to Berlin began. It would end 48 weeks later with Germany's unconditional surrender on May 8, 1945.

The 306th Bombardment Group (H) flew their first mission on October 9th, 1942, and their 342nd and last mission on April 19th, 1945. In those 931 days, 171 bombers failed to return to Thurleigh; 738 men were killed in combat operations; 145 were wounded in action; 38 died in flying accidents; 885 became prisoners of war; 69 were interned in neutral countries; 44 evaded capture and one escaped from prison camp.

There were 9,614 sorties flown; and 22,574.6 tons of bombs dropped. This tonnage was not even the equal of two bombs the size of the one dropped later at Hiroshima.

About the Author. At an earlier time, Mr Kelly was a pilot with the U.S. Army, later U.S. Air Force. He left active duty in 1953 as a Lt Colonel, USAFR. He presently lives in Scranton, PA.

The Next Best Kept Secret of WWII

Project Warrior:

Hill AFB played a key role in WWII Bombsight's success

Roger D. Launius, Ph.D.
Ogden ALC/HO, Hill AFB

Next to the atomic bomb, the Norden bombsight may have been the best kept secret of World War II, and workers at what is today known as Hill AFB, Utah, played a pivotal role in its success.

Throughout the war, the Norden bombsight, capable of dropping **"a pickle into a barrel at 30,000 feet,"** was being completely repaired and overhauled on the average of one every day in a small building on the base.

The bombsight had been one of the most important breakthroughs in aviation technology of the 1930's. At that time, a civilian consultant with the U.S. Navy, Carl L. Norden, and his associate, invented the most accurate targeting system for aircraft that had been devised.

As a result of operational tests a year later against an obsolete warship, the Army Air Corps contracted to purchase the sights and by the time America entered the war, all major bombers in the fleet — **B-17s, B-24s** and **B-29s** — had been equipped with the units.

The bombsight consisted of two complex components. An upper unit contained a vertical gyro, which afforded stability to a sighting telescope, and a com-

B-17

puting mechanism of gears, cams and springs. A lower unit housed a directional stabilizer which kept the aircraft on a true course without deviation to left or right, and through an autopilot-like process, maintained azimuth control of the system's optics.

If the bombsight worked correctly, a bombardier could, in a few seconds, set the distance the bomb would lag behind the airplane at the point of impact, correct for wind displacement, level the vertical gyro, synchronize the crosshairs on the target and have the sight automatically release the bombs when the proper drop angle had been obtained.

Without the availability of such a sophisticated bombsight, World War II bombardiers would have spent far too long manually calculating the proper drop figures, greatly prolonging the aircraft's exposure to enemy fighters and flak.

From the time of Hill's activation in November 1941, a special team of maintenance personnel worked on the Norden bombsight under the utmost security. The building was protected by a 10-foot fence, a multiple electric-eye alarm system, a double-door entry system and a guard who ensured that no unauthorized personnel entered the area.

Once inside the building, most personnel were prohibited access to areas where the components were actually disassembled and repaired.

Such security precautions were in line with procedures elsewhere. The instrument was so sensitive that upon arrival at any air base, the bombardier of a flight crew ensured its security. It was his responsibility to remove the sight from its brackets, place it in its carrying case and ensure that it was stored in a special vault before completing his duty day. If he was unable to do these tasks, responsibility for their accomplishment fell to the aircraft commander.

B-24

Under no circumstances was the Norden bombsight left in the aircraft. A directive specified that if the bombardier couldn't return the bombsight to vault security after a mission, he was expected to stay with it and guard it with his life and destroy it totally if it might fall into enemy hands.

Security was also a prime consideration on any crashed bomber carrying the bombsight. Gordon Howes, who worked on them at Hill during the war, related the story of how a B-17E aircraft, with the bombsight installed, crashed in the slopes east of Boise, Idaho, in 1944. He recalled, "I was directed to find the bombsight and/or certify its destruction prior to allowing anyone else but medical personnel into the crash area."

Mr. Howes was able to complete the assignment after only about four hours work at the crash site. His objective was to ensure that this sensitive piece of equipment did not fall into unfriendly hands.

B-29

The special maintenance team at Hill performed all repairs on all Norden bombsights installed on aircraft in the inter-mountain and northern Pacific areas.

Following general overhaul, the unit was reassembled and calibrated by Hill specialists. "It took eight to ten hours working on a simulated earth/space platform that would gradually calibrate out minute variations of gyro drift on all major points of the compass," Mr. Howes said.

In the first public story concerning Hill's involvement in the Norden maintenance effort — published in the base newspaper in December 1945 — the writer noted that the base was well known as "one of the leading depots of the nation in the overhaul of the Norden bombsight."

More than 40 years later, it can still be said that Hill's maintenance efforts on this important mission contributed greatly to the war effort.

DON'T BE GROSS

Maj Ken Haas
SIFC, Castle AFB

CROSS CHECK

Dear Sir:

Transport Canada, as the agency responsible for the safe provision of air navigation services in Canadian Controlled airspace, monitors and notifies operators of aircraft deviations from protected airspace so that they may take prompt and effective action to prevent a repetition.

A gross navigation error* has been reported in respect of the following flight:

Aircraft Identification: POGO 32
Departure: Pease AFB
Date: June 20, 1986
Type: KC-10
Destination: Mildenhall
Cleared Track: 63/20 60/10 BEN
Flight Plan Track: Same as cleared
Actual Track (if known): 63/20 59/10 BEN
(60 NM south of course)

An investigation of this gross navigation error is requested. Please provide a detailed explanation on the attached Error Investigation Form. In your reply, you are also requested to indicate the corrective action taken.

Please forward your explanation to:
etc, etc, etc.

*A gross navigation error is internationally defined as an unauthorized deviation of 25 NM or more from the exact centerline of the route of flight assigned by ATC.

Completed letters of this type have been appearing all too frequently through HQ Air Force to the MAJCOMs. The most recent embarrassment to the military occurred in a Nov 85 message from the FAA administrator to an Assistant Secretary of the Air Force stating that our gross navigation deviations have doubled the historical rate and request we (the Air Force) "get back on track," in more ways than one. Needless to say, we will be hearing more on this subject in the near future, and rightfully so. For example, the Air Force makes only 10% of the flights in the North Atlantic but has 20% of the gross navigation errors. These errors are not centered on any particular command, aircraft, active duty or Air Reserve forces. Although the problem is universal, gross navigation errors fall into three categories.

1. Equipment malfunction (self-explanatory)

2. ATC System Loop Errors. Any error caused by a misunderstanding between the pilot and the controller regarding the assigned flight level, Mach number or route to be followed, or errors in coordination

between ATC centers or misinterpretation of Oceanic clearances or reclearances by pilots.

3. Waypoint Insertion Errors. Tracking errors resulting from failure to observe the principles of checking waypoints to be inserted against the ATC assigned track and the careful loading and cross-checking of onboard computer display units. In other words, excellent navigation to the wrong point!

Equipment malfunction resulted in only one gross navigation error in 1985; and ATC loop errors were not responsible for any major deviations. This leaves the largest majority of gross navigation errors to waypoint insertion errors. Before we pass this article to the navigator because it's not a pilot problem, we should realize the primary means of navigation across the ocean is the self-contained INS navigation system; however, the ultimate responsibility belongs to the pilot in command.

Although being off course by itself does not create a problem, loss of separation with other aircraft does. When the loss of separation occurs too frequently, a mishap can occur. According to statistical models developed by Transport Canada, the number of gross navigation errors occurring recently has put us in the critical stage. If we continue at the present rate a major mishap is highly probable; any increase in deviations could make it inevitable. The alternative solution, if the military's performance does not improve, is to restrict the military from using designated oceanic airspace.

What can you do so your name won't appear on the sample letter, or worse yet, so you won't cause two aircraft to come into contact with each other? First, you can stop thinking it won't happen to you. If you could ask the crew members involved in a gross navigation error if they thought it would ever happen to them, you already know their answer. Next you can arm yourself with the knowledge necessary to get the job done. There are a variety of sources of information that will help you begin the process. These include:

1. Advisory Circular 90-79, 14 July 80 Recommended Practices and Procedures for the Use of Electronic Long-Range Navigation Equipment.
2. Advisory Circular 90-76A, 18 September 84 Flight Operations in Oceanic Airspace.
3. North Atlantic MNPS Airspace Operations Manual, 4th edition.
4. NOPAC Operations Manual, 2nd edition. Items 1-4 are free and can be obtained by requesting them from: U.S. Department of Transportation, Subsequent Distribution Unit (M-494-3), Washington, D.C. 20590.
5. FAA — 7110.83A Oceanic Air Traffic Control, 16 January 1986. Copies obtained through normal FLIP distribution, stock number FAATP 711083.
6. Oceanic Planning Charts 1, 2, 3. Copies obtained through normal FLIP distribution stock numbers OPC 1, — OPCXX01; OPC 2, 3, — OPCXX0203.
7. Jeppesen North/Mid-Atlantic Plotting Charts. Copies available in sets of 10 through FLIP distribution. HQ SAC/DOTO, Offutt AFB, NE 68113, must validate all requests for this product.

Finally, you can develop and follow crew procedures that will reduce the possibility for errors. Let's face facts, our local current ops folks and the stff planners at the Task Force locations do a great job, but they can't do anything about your clearance changes from an Oceanic controller or your crew coordination problems. The responsibility and the capability to fly the route correctly belong to the crew.

Remember, don't wait until your name appears in the lower portion of the above letter. **Start preparing yourself and your crew today!**

1986 Bombing

Maj Michael W. Bartlett
Bomb Comp Project Officer,
HQ SAC DOT

"Forty and Forward." The Strategic Air Command's Anniversary slogan announces a proud heritage, but looks to the future. Part of SAC's proud heritage is the Bombing and Navigation Competition, which has been held periodically since 1948. The competition points to the future by maintaining its objectives. They are: to demonstrate strategic bomber and tanker capabilities; test new equipment, procedures, tactics and concepts; and enhance *esprit de corps* by recognizing crew and unit professionalism.

The 1986 Bombing and Navigation Competition will feature 14 SAC bombardment wings, 11 refueling units including the Air National Guard and Air Force Reserve, and the Tactical Air Command. This year's competition will be the first since 1983 in which no foreign participants will compete.

SAC bomb wing competitors include two bomber and/or two tanker crews from each unit with the exception of the 93rd, 96th and 380th CCTS instructor personnel. Two KC-135 crews from

nd Navigation Competition

two ANG units and three USAF Reserve units will also participate. Additionally, two KC-10 crews will compete from the units at March, Barksdale and Seymour-Johnson. Tactical Air Command will be represented by F-111Ds from the 27th Tactical Fighter Wing at Cannon AFB.

This competition continues the tradition of a two phase scenario, started in 1984. Phase I will be flown during 3-21 September. Tankers will fly first this year on day missions on 3 and 5 September. Night sorties will fly on 15 and 17 September. The KC-135 competition route will test crews with an orbit exercise, a radar precision leg, day/night celestial navigation leg, and an inertial navigation system (INS) leg. The exercises will be scored for position and time at Hastings and Gordon, Nebraska; Forsyth, Montana; and Belle Fourche, South Dakota. All scoring will be accomplished using radar sites manned by personnel from the 1st Combat Evaluation Group (1CEVG), Barksdale AFB.

The KC-10 route will evaluate crews on two INS legs at Hastings and one orbit exercise at LaJunta, Colorado.

Bomber Phase One missions will be flown during the night. Each mission will start with high altitude bombing including a time control exercise at Hastings. After the high altitude bomb run, each crew will show its skills on a low altitude route (IR-428). Flying low altitude (approximately 600 feet above the ground) four simulated bomb targets and three simulated short range attack missile (SRAM) targets will be attacked. Terrain avoidance (terrain following for F/FB-111s), time control to the targets, and electronic countermeasures will also be scored. Target areas are located at Belle Fourche, Gordon, Yuma and LaJunta. The route is three hours and five minutes for B-52s and two hours and 20 minutes for F/FB-111 aircraft.

The second bomber mission begins with high altitude bombing against a different target at Hastings. The low level portion of the mission will be flown on IR-140 which is IR-428 backwards. Aircrews will again simulate attacking four bomb targets and three SRAM targets, with the 1CEVG scoring each run.

The inert weapons drop, added to the competition in 1984, will again be part of BOMB COMP 86 as Phase II of the competition. All bomber aircraft will fly a low level route (IR-126) with an entry point in southern Utah and the exit north of Las Vegas. Flying through the Nellis Military Operations Area (MOA) the bombers will pick their way through an area defended by F-15s from the First Air Force. Units are encouraged to use new ideas, techniques, tactics and innovative procedures to avoid or negate the fighter threat. After the fighter exercise crews will release practice bombs in the Nellis Bombing Range on two targets.

The Strategic Air Command is continually searching for ways to improve force effectiveness. A competitive environment is vital to the search for excellence. After each competition a summary of lessons learned is assembled and discussed by the competitors at the symposium held at Barksdale AFB 27-29 October. These lessons learned are important because they become the basis for changes in doctrine training, system modifications, tactics and techniques. The end result is our ability to "work smarter" at meeting our defense needs.

BOMB COMP: Just Winning Isn't Everything !

Capt Curtis M. Bedke
416 BMW, Griffiss AFB

Well, there's enough time passed between the symposium and now to make Bomb Comp '85 a bit of ancient history. The months of tedious preparation, and the all too short, frantic yet exhilarating flights themselves, are distant memories.

What does the crew force get out of Bomb Comp? Is it worthwhile from our perspective? Because if it doesn't mean anything to the men in the machines, then we need to rethink the whole concept.

Those crew members lucky enough to have had the chance to fly Bomb Comp will agree that it's definitely a real eye watering experience — and not just the symposium at Barksdale, either. It's too bad everyone can't do it. Fortunately, various missions like 8AF's Busy Leader, 15AF's Busy Razorback and assorted Red, Green and Maple Flags do give almost everyone a shot at high adrenalin flying; but generally these require at most a couple of days of mission planning. Imagine the tension of doing almost nothing for three and a half months except concentrating on two or three missions. In spite of your staff's encouragement that "win or lose, you guys are the best in our eyes," you can't help but feel like Charlie Brown on the pitcher's mound: You're gonna be the hero, or the goat.

Here are a few of the scenes I wish everyone could have peered in on.

- Both crews crowded around a Red Flag chart for hours, discussing various terrain masking routes through the MOA; measuring distance/time-saving options, weighing on-the-spot alternate paths to take if fighters jump us at each point along the way. Memorizing the entire range so we won't need the chart, arguing tactics as intensely as if Ivan owns the range.
- The very first score of Bomb Comp — the high altitude release at Bismarck, after a funky offsetting turn at the IP and 13 minutes of carefully planned ECM maneuvering. The pilot rolls out a tenth of a degree off his ADF heading, the nav and copilot zero the timing, the radar is "Using the Force," and the EW feels really

good about the run. We've had our first taste, and the tension seems to peel off us. Sometimes you just know it's gonna be a great flight.

• The STRC is IFR as we pass the SMA at Powell, our toughest ECM run. Suddenly it goes VFR, and we nose the aircraft over. For the next seven minutes, we dive and climb, swoop and soar, opting to gradually whifferdill towards the deck rather than simply drop to TA altitude. It works — when it's all over, we know that the offense's super navigation, pilots' maneuvers and defense's countermeasures have really come together to whip this site.

• Mission 3 — Red Flag — we've flown what we feel to be two perfect missions. This one feels good so far, and two minutes into the Red Flag MOA, the copilot taps the pilot on the shoulder and grins. The study paid off; everything looks exactly like we expected and for the next 23 minutes to bomb release we feel like we own this area.

• Second gravity shape — the "Bomb Released" light flickers, exactly on time. We're perfect on timing for every Bomb Comp release (a big crew goal), the bomb bay is empty and the site called "two good chutes." We've done it! Three perfect missions from the crew standpoint — the rest is up to fate. Only one thing remains, and it is completely out of our hands. The EW's flare system check must now test good; we must get a light to flash once all flares have been simulated expended. Tension hangs like a low cloud.

• The EW begins laughing — no words needed, it's a laugh of pure joy, a release of three months of suspense. The light is on. The whole airplane erupts in exultation. There isn't one second of the entire three sorties we'd go back and change, and as we congratulate each other, we feel the true pride that comes from knowing you've "even impressed yourself."

On the way back home we get a phone patch to command post: "Control, get with scheduling and tell them we'd like to bootleg some high runs."

"You WHAT? On a Bomb Comp sortie?"

"Hey, just tell them we're on such a roll, we hate to stop now."

—

Every crew that flew in Bomb Comp has their own stories — and also lessons that they learned along the way. The "agony of defeat" plays as big a role at the "thrill of victory" and for many very fine crews, Clausewitz's number one principle, the fog of war, can step in to randomly take them out of the running: a bomb's chute failure, for instance. Bomb Comp, like war, grades only success or failure.

So the crews finish with trophies, or with nothing but pride. But they all gain lots of valuable experience. All too often, however, this experience is kept secret and stays with the crew — which usually disbands soon after — or gets passed on only to the next Bomb Comp crews. Think of the things the competitors learn about:

(1) Releasing weapons within one second every time;

(2) Terrain masking — not just terrain avoidance, but maneuvering, using shadow and color, varying altitude and airspeed as fits;

(3) High altitude ECM and ADF running concurrently;

(4) Low altitude fighter activity; and most of all:

(5) Crew coordination, or how to say volumes and wonder why it seems so quiet.

Well, whose fault is it that this information isn't getting out to the crews on alert? Let's deftly sidestep that as being an unfair question and rather be more positive. Who can take the extra step to insure that this information gets to the front line?

I'd like to charge each of these three groups with the task:

(1) Squadron Commanders
(2) Bomb Comp Crews
(3) Mission-Ready Crews

The squadron commanders can emphasize the importance of making Bomb Comp pay off for everyone. They can provide opportunities for the exchange — hangar flying sessions on alert are a perfect example, as are the local training flight and stan/eval newsletters. The Bomb Comp crews should talk and write about what they've learned, and plan even before the competition missions to note their successes and failures as they occur. It is their obligation to teach what they learn. Finally, the mission-ready crews have to question, cajole, needle the Bomb Comp crews. You'll probably get just as much out of stories told on alert in the evening as out of the formal discussions.

The odds are that the techniques that worked or failed during Bomb Comp will have the same general effect in the real competition — and in that one, winning IS everything!

A Memorable "Dollar Ride"

Maj Dave Holmes
96 BMW, Dyess AFB

The B-1B flight was planned as the crew's first combat crew training squadron (CCTS) sortie. Maintenance on the inertial navigation system delayed our takeoff from Dyess for one hour. The planned mission included takeoff, air work, low level, air refueling and then transition. Departure was cut short to maximize time in the air-work area.

The first maneuver was accomplished to demonstrate the effects of wing sweep on angle of attack and the incompatability of aft wing sweeps and low airspeed. We swept the wings from 25 degrees (normal cruise) to 67.5 degrees (full aft), stopping at 35 and 55 degrees to assure center of gravity movement. The wings were then returned to 25 degrees, reversing the procedure. During this demonstration, we noted that the number three accessory drive system (ADS) caution light flickered off and on. The accessory drive system drives the B-1B hydraulic system and generator.

The second maneuver was a full aft wing sweep approach to stall. Again, we swept the wings aft using the incremental positions. After establishing the desired flight characteristic, we observed that the number three ADS caution light illuminated steady. I advised the pilot, Maj Bill Fier, to return the aircraft to normal cruise configuration and deal with the malfunction. He moved the wings to 55 degrees, checked that the center of gravity moved to its proper position, and then moved the wing sweep handle to 35 degrees. There was no movement from the wings. I then attempted to move the wings using my handle, but still nothing happened. We checked in the mirrors and confirmed that the wings were still aft.

About this time, the avionics instructor (AI) Maj Dean Hodgson, moved forward with section three of the PTO 1B-1B-1-1. He confirmed that the number three engine should be shut down due to the ADS malfunction and this was accomplished. Maj Hodgson and I reviewed the section three procedures for wing sweep malfunction, but due to the incomplete flight testing, we found little help in the 92 printed words.

For Instructor Team 66, pilot Maj Bill Fier, offensive system officer (OSO) Maj Jim LaSalvia and defensive system officer (DSO) Capt Fred Strain, this had turned out to be an interesting first mission. However, these professionals demonstrated what crew coordination is all about. As I worked the emergency, Maj Fier flew the aircraft. The 24 minutes of B-1 time he had already accumulated had been spent demonstrating the operating flight envelope, so he was prepared. Maj LaSalvia, while only in the OSO seat for those same 24 minutes and with previous B-52 offensive avionics system experience, operated the B-1 OAS to provide navigation direct to Edwards AFB. Capt Strain applied his vast experience gained in the past 24 minutes, combining that knowledge with the environmental research simulator (ERS) time he had accrued, and navigated around the Brownwood Military Operating Area (MOA) using the aircraft's defensive computer system.

I contacted the Dyess AFB command post and relayed our problems, along with a request to head toward Edwards. "Roger, sir, standby," familiar words of infamy! The battle staff convened, the problem was analyzed, the options scrutinized, and a determination made — divert to Edwards. (What seemed obvious to us "old SAC troops" who have always briefed going out to Edwards to use the lakebed, turned out to be not necessarily so obvious — the lakebed was wet. Who would ever have thought it would rain at Edwards?)

While the battle staff worked the problem, our Brownwood MOA time expired. We obtained a radius clearance around Abilene at 10,000 feet. Maj Fier kept the angle of attack and bank angles low, Maj LaSalvia resumed normal duties of navigation,

and Capt Strain kept the command post informed and answered their questions. Maj Hodgson and I picked apart each of those 92 words and started to look for something between the lines. Maj Hodgson found a circuit breaker labeled SURF MEAS SYS NO. 1. We agreed to pull it and then reset it. When pulled, every warning device you ever wanted to hear came into the pilots' headsets. We quickly reset it! Once reset, we again attempted to sweep the wings forward. A slight shudder was felt, but no real movement.

A KC-135 launched from Dyess and an enroute rendezvous was accomplished. Crew coordination was the thread that made it all happen without any problems. Maj LaSalvia quickly and precisely provided Maj Fier with updated headings for the rendezvous while Capt Strain handled the command post communication. He was constantly aware of our present position, our relationship to the tanker, and our plan, plus relaying back the myriad of questions and test codes. So often, as on B-52s and other multiplace aircraft, the individual communicating with "control" is not situationally aware, causing extra interphone communication and hindering crew coordination. Capt Strain handled it all perfectly.

After reviewing the PTO 1B-1B-1-1 data for this problem, we decided the condition was not covered. As Maj LaSalvia directed us to the tanker, Capt Strain established HF contact with the command post. He relayed valuable information to the crew on chase operations at Edwards and updated our estimated time of arrival to our chase rendezvous point.

We accomplished air refueling with surprisingly little difficulty, at 21,000 feet, one engine shutdown, one engine in afterburner and the wings aft. Other than that, we had a normal contact and onload! By the end of air refueling, the F-111 chase was closing in on our position. At the end of air refueling, we descended to FL 200 and spotted the F-111 at 16,000 feet. While the F-111 directed us toward Edwards, we descended to 15,000 feet and accomplished the controllability check. When I lowered the gear, the aircraft began a descent which I arrested at 13,200 feet using the afterburner. All of us were concerned, but at 13,000 feet, it appeared as though the aircraft would fly down to 250 KIAS. It was time to begin an approach.

Maj Fier briefed the crew on the planned landing, the consequences of going into the lakebed and possible emergency ground egress.

Maj LaSalvia and Capt Strain called off altitudes down to 3800 feet traffic pattern on final. We flew two practice approaches at 246 knots indicated airspeed (KIAS), then 243 KIAS on final. On our third approach, indicated was 236-238 KIAS, 252 knots ground speed. We accomplished a quick review of braking techniques on short final and made a comfortable touchdown. Maj Fier read off the groundspeed as the aircraft slowed. At 230 knots groundspeed, I applied the brakes.

When we were informed of a brake fire, crew coordination among all five crew members provided a most expeditious evacuation. As the aircraft rolled to a stop, Maj Hodgson inserted the bottom bailout pin, opened the hatch and lowered the entry ladder, allowing the rest of us to accomplish a quick evacuation of the aircraft.

Many firsts were accomplished on this sortie and valuable test data was gathered. I have been congratulated 100 times for the landing; in reality, the landing and the entire effort to get to Edwards were the result of crew coordination. Crew 66 had not flown together before, yet each knew what was expected. Most of us multiplace fliers can take a lesson from Crew 66. Be prepared, know your duties, the duties of the other crew members, and stay aware. It made a **big** difference on that memorable day.

HEADS UP FLYING CLUB

Instructor Team 66, 96 BMW, Dyess AFB (L-R): Maj Jim LaSalvia, OSO; Maj Dean Hodgson, AI; Capt Fred Strain, DSO; Maj Bill Fier, P; and Maj Dave Holmes, IP. Their professional reactions to a potentially catastrophic emergency, combined with exceptional flying skills in an untested landing configuration, prevented the loss of valuable aircraft. General Larry D. Welch, then commander in chief, SAC, presented each crew member with an air medal for outstanding airmanship.

SAFETY CROSS FEED

The Psychological Side of Human Factor Mishaps

From ATC's Approach to Safety

Most human factor accidents are directly related to one of three events: a lack of attention, attending to the wrong thing, or a misperception of the outside world. Some psychological factors which directly affect these events are boredom, complacency, distraction, fascination, apprehension, and transitioning.

When you transition from one type aircraft to another, new habit patterns must be learned not only by the conscious mind but also by the cerebellum, the brain's center for balance, coordination and habit patterns. The cerebellum takes about 200 hours of operator time to learn a new habit pattern so you don't have to consciously think about the action. During this 200 hour period, you will revert back to old habit patterns when you are subjected to an immediate, severe stress. Did you ever change to a bicycle with hand brakes instead of coasters? How many times did you back pedal to stop? When you are apprehensive or threatened, your perceptual field narrows to the source of the threat. This "tunnel vision" was probably very useful when running away from a dinosaur, but the stresses involved with flying require an expanded cross check to successfully cope.

Our attention can be involuntarily drawn away by novel or fascinating events. Bright lights or any kind of motion will draw our eyes by a reflex which is difficult to suppress even if you are aware of it. Although a useful survival trait, diverting the eyes to moving canopy reflections or the slewing of the HUD pitch ladder can be very disorienting. New dramatic terrain or maybe an F-16 on the ramp can also draw our attention when we need it elsewhere. How well did you clear for other aircraft the first time you saw the Grand Canyon from the air? Distractions can also set up accidents when they break our habit patterns. When we learn sequential items, we tend to lump them together into compartments or routines. When you have done the last item in the compartment, your mind assumes the entire compartment has been completed. If however, something distracted you and you missed an item, you'll still assume that all items were completed. Every pilot that has landed gear up knew he put the gear down . . . and he did . . . on previous landings. During the mishap sequence he thinks "Did I put the gear down?" Instead of checking for three green, he assumes "Yes," because the compartment that includes lowering the gear has been completed.

Boredom and complacency occur when flying an airplane or mission that no longer challenges you. Whether you're bored with the whole thing or an uneventful portion of that flight, your mind will try to escape to more rewarding pursuits such as daydreaming or fantasizing. After years and years of avoiding mishaps, you may no longer perceive a threat or necessity to do some checklist items. This complacency, along with boredom, reduces the effectiveness of the attention we give to flying. Boredom and complacency can also lead to risk-taking behavior in an effort to boost the ego. The poor decisions that ensue can be eliminated with some knowledge of ourselves.

Everyone has an internal self-image or ego which they must constantly build and enhance. For pilots, who typically are very aggressive, self-reliant and achievement oriented, this ego is enhanced daily by overcoming challenges and successfully completing tasks. Flying airplanes provides an easily measurable set of tasks to accomplish, and occasionally, the ultimate in challenges, using our skill and judgment to stay alive. That is probably the real attraction of flying; it's one profession where your mistakes will kill you, where the ultimate responsibility for failure is not spread throughout an entire company. This ego-building aspect of flying can be very addictive and dangerous when the novelty of your flying mission and/or airplane has worn off. Without a challenge to overcome, our self-image suffers and we tend to seek out challenges, become overconfident or even underconfident.

Motivation to succeed and confidence are necessary for our jobs as military pilots. The problem starts when either is taken to excess. In a recent T-38 fatal mishap, the pilot flamed out both engines trying to outclimb an area of thunderstorms while enroute to an exercise base where he was to give a briefing. Was the briefing really worth penetrating thunderstorms in a display of "get-there-itis"? How about the T-37 auxiliary field crew who attempted to roll their T-37 at 200 feet on takeoff leg? Or the ATC pilots who tried to roll a T-38 with gear and flaps down on takeoff leg? These last two are examples of overconfident pilots who had begun to believe that nothing could ever happen to them, even when trying the impossible. Not very healthy or smart! Although not common, underconfidence can also cause stress. A relatively inexperienced pilot thrown into a new environment without adequate briefing or knowledge of the local terrain caused channelized attention and poor decisions in numerous recent mishaps.

"Every pilot that has landed gear up knew he put the gear down . . . and he did . . . on previous landings."

A final warning. The poor, even stupid, decisions caused by an excessive motivation to succeed, overconfidence or underconfidence will seem very logical and appropriate at the time, even if they violate known laws of physics. Flying is dangerous enough without adding unnecessary stresses.

These and other psychological stresses are many times neglected because we think they are signs of weaknesses. We pilots like to think of ourselves as invincible, probably as a mental defense against the dangerous life we lead. Being aware of our psychological limitations is not a sign of weakness but a sign of maturity and of a safe, effective and professional pilot.

"PUZZLELAND"

— Kelly Facility Puts Pieces Together

Perry Nelson
San Antonio ALC Materiel Management
Kelly AFB

The hand-painted sign with red letters at the entrance bears the name "Puzzleland." It's an appropriate label.

It's San Antonio Air Logistics Center's Life Support Equipment Investigation Facility (LSEIF) at Kelly AFB, Texas, where the life support equipment and escape systems of aircraft involved in mishaps are painstakingly reconstructed.

Part of San Antonio ALC's Directorate of Materiel Management, the LSEIF is the only facility of its kind. It was established in 1983 to assist safety investigation boards in determining if the use or non-use of life support equipment was a factor in a mishap. When a mishap results in crew member injury or loss of life, this activity joins the investigation.

The two-room facility at the Air Force Logistics Command installation is crowded with ejection seats, flight helmets and related odds and ends. Mike Grost, a representative of Martin-Baker Aircraft Co. Ltd., the British firm that manufactures F-4 ejection seats, conducts indepth studies at the facility. A native of Denham, England, he has more than 20 years experience as an escape systems field engineer.

> **"Very often, all the available evidence is compacted into 20-30 pounds of molten material — all that remains of what used to be the cockpit and ejection seat."**

"The work done here involves a close integration of medicine and engineering," Mr. Grost explained. "I work very closely with the findings of the Armed Forces Institute of Pathology in Washington, D.C. There is an interaction between the medical aspects of an injury and escape systems and equipment. You can't study one without the other."

Mr. Grost photographs, identifies and documents each piece of evidence and uses X-ray equipment to examine injuries sustained by crew members. Other procedures include microscopic analysis, equipment reconstruction and anthropometric/equipment correlation. In the latter, an individual with body measurements similar to those of an injured crew member is used to study the location of injuries relative to the aircraft equipment.

Test flights are often conducted in an attempt to correlate a crew member's body posture to flight attitude at impact.

Very often, all the available evidence is compacted into 20-30 pounds of molten material — all that remains of what used to be the cockpit and ejection seat. In such cases, Mr. Grost has to dig more deeply into the field of forensic medicine, studying medical reports and comparing autopsy findings against equipment damage to determine the cause of injuries.

"This is a tough business," he said. "There is no such thing as an easy mishap."

But not all the life support equipment problems that the LSEIF deals with are connected with mishaps. It also analyzes equipment malfunctions reported from the field and conducts studies designed to enhance the various systems.

Because the facility is **one-of-a-kind,** it also handles investigations on all ejection equipment in the Air Force inventory, as well as equipment from other military branches.

Mr. Grost has other duties in addition to his investigations. "There's a lot of teaching involved," he said. "I'm an instructor at the Life Support Officers' School at Randolph AFB, Texas, but we also train enlisted personnel and civilians. Our goal is to promote expertise — something which is hard to put a price on."

Turning people into first-rate investigators takes two years of training followed by three to five years of actual field experience, according to Mr. Grost.

"A person has to develop an instinct — know where to look," he said. "It might take days and days to search for something and be able to tell what you were searching for when you finally find it. The investigator also has to know what went on at a mishap site, and whether there was any tampering with evidence."

Getting to the bottom of a mishap is something the Air Force does very well, he added.

"The Air Force system is the best in the world," Mr. Grost said. "The Air Force believes that people's safety is the most important factor."

He pointed out that with each investigation performed at the LSEIF, additional knowledge is gained concerning a particular aircraft and its respective life support equipment.

"Results of the investigations can lead to new equipment designs and the development of improved technical procedures to safeguard crew members," he said.

Mr. Grost noted that in order to be of any value, accident analysis and reconstruction need to be conclusive and precise.

"Unless a specific cause is identified, the potential exists for repeated problems," he said. "And in this business, we have as much need to be inconclusive as a pilot has to practice spin recovery during landing."

Mike Grost, left, escape systems field engineer from Martin-Baker Aircraft Co. Ltd., and Perry Nelson, Material Management egress system equipment specialist, examine a pilot's helmet and other pieces of wreckage.

PROFESSIONAL PERFORMERS

Missile Maintenance

SSgt Del M. Schalz, 308 SMW, Little Rock AFB, is SAC's ICBM Maintenance Airman of the Month. Assigned to the propellant servicing branch, Sgt Schalz brought a wealth of deactivation experience to the 308th from a previously deactivated Titan base and was an integral part of tech data validation/refinement for downloading/transfer of missile propellant. His knowledge directly supported depot personnel in validating new procedures for using the propellant holding trailer Stage I transfer pump exclusively to load transporters for a faster, safer and more efficient operation of downloading fuel from the deactivated missiles. He helped Martin-Marietta personnel validate tech data for a newly arrived fuel incinerator, reflecting the confidence in him and his level of expertise by his superiors. Sgt Schalz has excelled by setting a fast pace for all maintenance people as he continues to emphasize maintenance the Air Force way.

Aircraft Maintenance

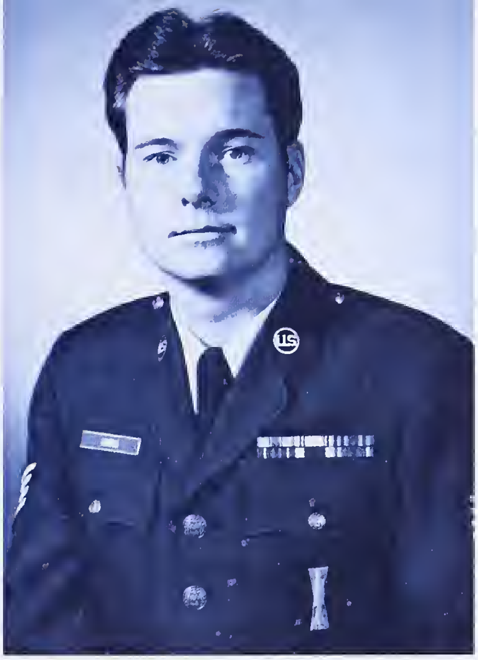
A1C Michael A. Reneski, 384 AREFW, McConnell AFB, is SAC's Maintenance Airman of the Month. Currently serving in the inspection section of the 384 OMS, A1C Reneski is a superb example of the "whole person." He completed his five level requirements, which normally take over a year, in only five months. His soundness as a technician has been proven over and over again by his 100 percent pass rate on all QA evaluations. His dedication and can-do attitude helped his section to achieve four "outstanding" aircraft periodic inspection ratings in a row from QA and zero defects in his area when inspected by MSET in December. A1C Reneski's professional qualities were recognized recently by the IG team when he was selected as a "professional performer."

Munitions Maintenance

SSgt Robert S. Harris, 308 SMW, Little Rock AFB, is SAC's Munitions Airman of the Month.

A munitions team chief assigned to the RV branch, Sgt Harris' performance during a DOD Nuclear Agency inspection was superb as he performed five tasks flawlessly. As a result he was honored as one of only two technicians ever to receive a letter of recognition for outstanding performance from that agency. Sgt Harris again displayed his superior technical ability when he was evaluated by the 3901 SMES. He led his team through three complicated maintenance tasks with only one minor error, and was recognized as a "professional performer." When the SAC IG evaluated Sgt Harris, they too were impressed. He and his team performed three maintenance tasks with error free results and were applauded in the inspection report. As a result of his superior leadership and technical abilities, Sgt Harris was selected as the 308 SMW's munitions team chief for the 1986 Olympic Arena competition.

SSgt Del M. Schalz


SSgt Robert S. Harris

A1C Michael A. Reneski

2Lt Robert W. Rayner, 1Lt Gordon K. Lee

Missile Crew

Crew R-183, consisting of 1Lt Gordon K. Lee, MCCC and 2Lt Robert W. Rayner, DMCCC, 341 SMW, Malmstrom AFB, is the SAC Missile Crew of the Month.

Crew R-183 exhibited outstanding technical knowledge and superb crisis management tactics in the face of a potentially dangerous situation. While on alert at LCF S-O, an inoperative signal data recorder at LCF R-O required the crew to monitor status of R-O's launch facilities, the maintenance activities on three penetrated LFs, and a communication maintenance team in the launch control equipment building (LCEB). Crew R-183 detected smoke coming from the status console. After swift analysis of the situation, the squadron command post, the flight security controller and the team working in the LCEB were immediately made aware of the potential loss of communications. Using their technical data and expertise, they made every effort to control the fire consistent with the safety of all personnel involved. After all isolation actions were accomplished, the crew monitored for dissipation of the smoke. When it was safe to exit the launch control center (LCC), the crew took status of the LCC and LFs topside along with the team working in the LCEB. They quickly reestablished communications and updated status of the fire and actions taken. The quick reaction of Crew R-183 allowed job control to divert a maintenance team to correct the problem and restore full capability in minimum time. Crew R-183's leadership qualities and aggressiveness prevented additional equipment damage and possible injury in a situation where the potential for loss was immense.

THE CUTTING EDGE

Capt Michael D. Janeway
Capt Val J. Evans
4315 CCTS, Vandenberg AFB

MCC Contingency Procedures

There I was . . ., sitting in the crew commander's chair and settling into my fourth back-to-back alert. Three hours into the alert I was adjusting to the ever present drone of the motor generator and the chilly air blowing down my back from the air conditioning ducts. It was 1230 local and time for the afternoon rerun of M.A.S.H.

As I sat down to eat lunch, the SCC phone rang. "Hey Chris, get that will you?" I said to my deputy. Being an old head on crew, and having seen the TV episode twice, I was able to listen to the program and my deputy at the same time. There was a maintenance team topside working on the above-ground 755 gallon fuel tank. Like all good crew commanders, I wanted to ensure they were complying with the tech data and all applicable safety precautions, so I took the briefing from the team chief. When I felt comfortable with his job knowledge, I allowed him to proceed with the tank modification. I sat back down to TV and lunch.

Fifteen minutes later the SCC phone rang again. This time Chris was busy so I answered. It was a very excited facility manager, "Sir, this is Sgt Jones. The maintenance team was trying to move the tank when the crane cable slipped off. The tank has broken open and there is gasoline flowing down the site access road and toward the launch control facility. What should I do??

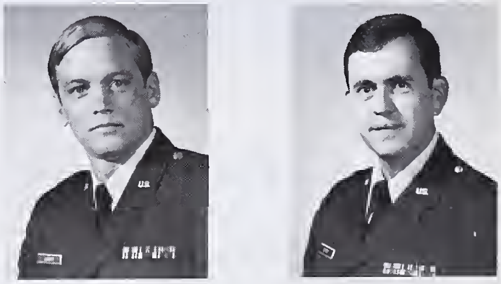
What would you do? Is there a checklist or procedure to handle such a serious and unusual situation? The answer is yes.

SAC does have provisions for such an emergency situation. In SACR 55-56, Vol VII, Minuteman Missile Combat Crew Operations Flimsy, Chapter Six, you'll find "MCC Contingency Procedures." There are three rather general areas outlined in this chapter: Contingency Checklist, Severe/Hazardous Weather Checklist and Threatening Telephone Call Checklist. They're designed to cover a wide variety of emergency situations for which you have no specific guidance. These "catch-all" procedures cover almost all possibilities such as: illness or injury of personnel in the flight area; major or potential disaster to a missile convoy or launch facility; severe weather conditions; or terrorist activity. In this scenario the Contingency Checklist was required.

I immediately felt a rush of adrenalin as my heart raced. "Chris, get on the phone," I yelled, as thoughts of what to do sped through my mind. It was easy to imagine 600 gallons of gasoline exploding and the injury and damage it would create. Not only could the site have been destroyed, but we were surrounded by thousands of acres of extremely dry Montana wheat. Then I remembered the checklist that's versatile and useful in any serious situation, MCC Contingency.

"Chris, pull out your crew flimsy and let's run crew contingency," I said. To make a long story short, we cleared all site personnel 2000 feet up wind, restricted radio transmissions, had the flight security controller establish an entry control point, requested fire fighting teams from the support base and relayed all information to the wing command post. As missile operations crew members, you might see MCC Contingency Procedures once or twice a year in the Missile Procedures Trainer. In real life situations, such as this example, emergencies happen fast and require all of your technical abilities and professional judgment. MCC Contingency Procedures can play an important role in preventing possible loss of life and/or equipment damage. In any serious incident, it's important to maintain a calm, professional attitude. Keep in mind that the Contingency, Severe/Hazardous Weather, Threatening Phone Call Checklists can be invaluable aids in controlling potentially hazardous situations. Ultimately, it's your professional manner and job knowledge that will influence the outcome. We recommend frequent and regular crew self-study as a foundation for proficiency.

About the Authors



Capt Mike Janeway (left) is an ICBM operations instructor with the 4315 CCTS. A 1978 graduate of Miami University, he will be assigned in October to the Small ICBM Program Control Office in the Ballistic Missile Office at Norton AFB.

Capt Val Evans (right) is a graduate of Weber State College. Since his arrival at the 4315 CCTS, he has been an MPT instructor and is currently a training science instructor.

SAC SAFETY SCREEN

70 AREFS, Grissom Crew R-181: P Capt Theodore A Brown, CP Capt Peter W DeWolff, N 1Lt Michael J Reckling, BO SSgt Johnnie Mize

70 AREFS, Grissom Crew E-180: IP Maj Van A Bareither, CP Capt Scott S Kishline, N Capt Eric L Blackmon, BO SSgt John G Basso

325 BMS, Fairchild Crew R-33: P Capt Christopher Komenda, CP Capt Christopher W Woodward, RN Capt Kent I Sheperd, N 1Lt Gary B Grue, EWO 1Lt Kenneth F Burgess, AG A1C Lincoln J Miller

128 AREFG, Gen Mitchell Fld, Milwaukee, WI: IP Lt Col Gary A Tenney, P Maj William G Herlihy, IN Maj Lon M Hansen, IBO MSgt Herbie E Kieferndorf Jr

644 BMS, K I Sawyer Crew E-23: P Capt Robert E Sears, CP Lt Scott A Chapman, RN Capt Kenneth B Havens, N Lt Stephen J Stoltz, EW Capt John R Baurele Jr, G Sgt Andy R Zimmerly, SO Lt Billy R Maberry

307 AREFS, K I Sawyer Crew E-173: IP Capt Jeffrey A Moore, CP 1Lt Paul D Carrubba, NN 1Lt Phillip T Allocco, BO SSgt Clinton E Reed

2 ACCS, Offutt Crew E-108P: IP Maj William W Kelly, CP Capt Mark D Sheedy, NN 2Lt Russell A Desrocher, IBO MSgt Jackie A Park

912 AREFS, Robins Crew E-130: IP Capt Keith J Kuhlmann, CP 1Lt Kyle J Smith, NN 1Lt Michael J Barrett III, BO SSgt Kevin J Metz

92 AREFS, Fairchild Crew E-181: AC Maj Brian W Horst, CP Capt Jay S Mershon, CP 1Lt Elizabeth I Futrell, N Capt Gary L Caton, B TSgt Jack L Peters

92 AREFS, Fairchild Crew R-183: AC Capt David P Duquemin, CP 1Lt Anthony Lanzillo, N 1Lt Kevin S Korta, B Sgt William E Baker

99 AREFS, Robins Crew E-161: IP Maj William J Fuqua Jr, CP 1Lt Christopher S Murphy, NN 1Lt Edward P Gadarowski, BO SSgt Kurt D Perry

60 BMS, Andersen Crew R-31: AC Capt Thomas R Olsen Jr, CP 1Lt Christopher B Allenby, RN Capt Donald E Simmons, N 1Lt Dudley L S Woods, EWO 1Lt Marvin D Engels, AG SSgt John E Wing

60 BMS, Andersen Crew R-24: AC Capt William D Wesselman, CP 1Lt John S Gustafson, RN Capt Michael A Thomas, N 1Lt Bradley D Benson, EWO 1Lt Keith A Glass, AG SSgt Ronnie C Mason

43 AREFS, Fairchild Crew E-132: IP Capt David A Pfeifer, MC 1Lt Kevin W Graves, MN 1Lt David S Schaubert, MB Sgt Jeffrey D Keeton

909 AREFS, Kadena Crew E-140: IP Maj David L Fundarek, CP Capt Jon B Dudley, IN Capt Diana B Miller, IBO Sgt Victor Arzuaga

43 AREFS, Fairchild Crew E-134: MP Capt Gary L Dettman, MC 1Lt Joseph P Intardonato, MN 1Lt Jeffrey J Sevela, Training Flight IB TSgt Phillip B Montgomery

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

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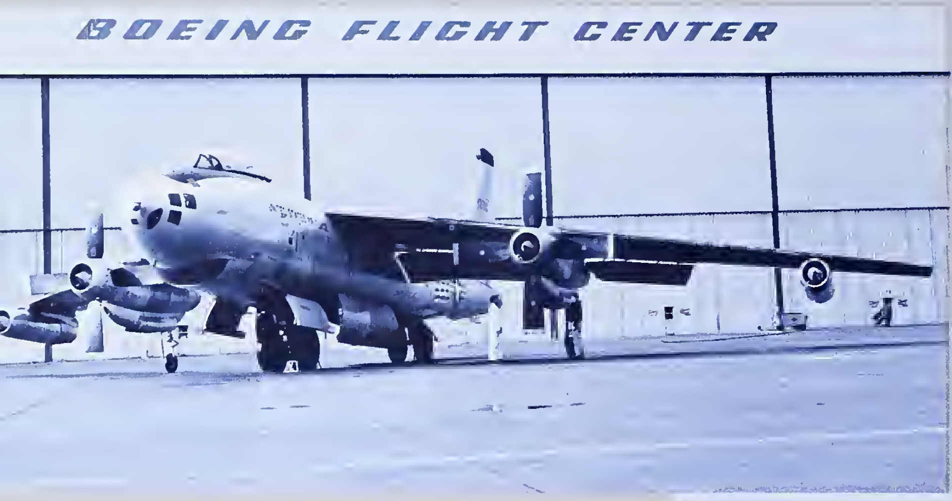
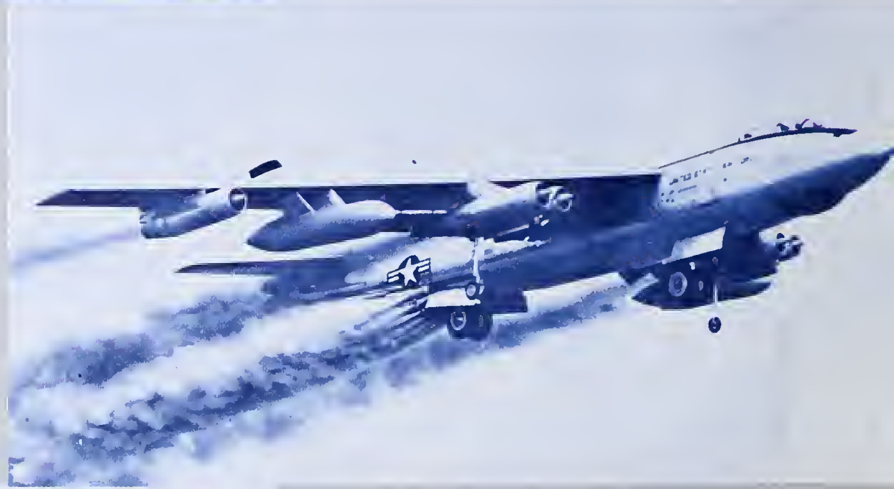
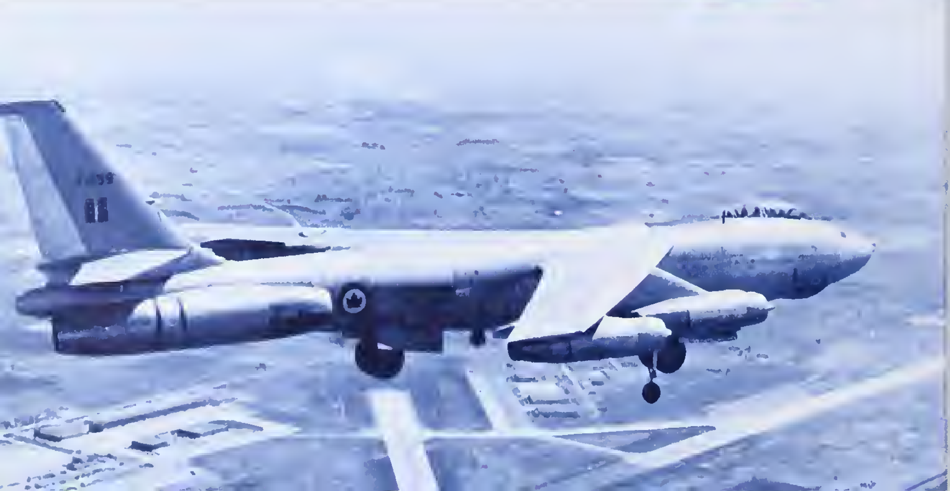


XB-47D test aircraft. Note the two inboard Allison turboprop engines.



Utilizing JATO rockets, a SAC B-47E takes off.



A Canadian Air Force XB-47 test aircraft. The rear jet engines were built by Orenda.